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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR     | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/838,119      | 04/20/2001  | Adolf Schafer-Sindlinger | 33766W026           | 8727             |

7590 09/22/2003  
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9  
EXAMINER

STRICKLAND, JONAS N

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

1754

DATE MAILED: 09/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/838,119

Applicant(s)

SCHAFFER-SINDLINGER ET AL.

Examiner

Jonas N. Strickland

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 10 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Response to Amendment***

1. This Detailed Action is in response to the amendment filed on 7/10/03 as Paper No. 8. Claims 13-16 have been cancelled without disclaimer. Claims 1-12 are currently pending.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-6 and 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hammer et al. (DE 19820682 A1).

Applicant claims a process for reducing nitrogen oxides present in a lean exhaust gas from an internal combustion engine by selective catalytic reduction on a reduction catalyst using ammonia, comprising oxidizing some of the nitrogen monoxide present in the exhaust gas to nitrogen dioxide so that the exhaust gas contains 30 to 70-vol.% of nitrogen dioxide before contact with the reduction catalyst, wherein the reduction catalyst comprises a zeolite exchanged with a transition metal.

Hammer et al. discloses a process for the exhaust gas purification from internal combustion engines by selective catalytic reduction. Hammer et al. continues to

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disclose wherein ammonia is used as the reduction substance, which is made available through SCR process of a urea hydrolysis. Furthermore, Hammer et al. discloses wherein nitrogen oxides are oxidized mainly to nitrogen dioxide only to a small degree. Hammer et al. continues to disclose wherein an oxidation catalyst is utilized to oxidize some of the nitrogen monoxide to nitrogen dioxide. The reduction catalyst is comprised of a copper exchanged ZSM-5 zeolite.

Therefore, it would have been obvious to one of ordinary skill in the art to oxidize some of the nitrogen monoxide present in the exhaust gas to nitrogen dioxide so that the exhaust gas contains 30 to 70 vol.% of nitrogen dioxide, because Hammer et al. discloses wherein nitrogen oxides are oxidized mainly to nitrogen dioxide only to a small degree. It would have been obvious to reach this volume percentage of nitrogen dioxide based on the teachings of Hammer et al. Furthermore, Hammer et al. teaches using an oxidation catalyst and a copper exchanged ZSM-5 zeolite reduction catalyst.

With respect to claim 9, Hammer et al. discloses wherein oxidation of the nitrogen monoxide present in the exhaust gas takes place with a gas discharge.

5. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hammer et al. (DE 19820682 A1) as applied to claims 1-6 and 9-12 above, and further in view of Andreasson et al. (WO 99/39809).

Applicant claims with respect to claims 7 and 8 wherein the oxidation catalyst comprises platinum on a stabilized aluminum oxide deposited on a honeycomb. The teachings of Hammer et al. have been discussed with respect to claims 1-6 and 9-12 and Hammer et al. teaches using an oxidation catalyst. However, Hammer et al. does

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not teach wherein the oxidation catalyst comprises platinum on a stabilized aluminum oxide deposited on a honeycomb.

Andreasson et al. discloses a system for the reduction of nitrogen oxides in exhaust gases, which incorporates an oxidation catalyst to convert at least a portion of nitrogen monoxide present in the exhaust gas to nitrogen dioxide, a source of reductant such as ammonia and a SCR catalyst (see abstract). Andreasson et al. continues to disclose wherein the oxidation catalyst may be Pt on aluminum oxide deposited on a honeycomb carrier, with respect to claims 7 and 8 (p. 2, lines 26-30).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Hammer et al., based on the teachings of Andreasson et al., by using an oxidation catalyst comprised of platinum on a stabilized aluminum oxide deposited on a honeycomb in a system for reducing nitrogen oxides, since Andreasson et al. teaches a system for the reduction of nitrogen oxides in exhaust gases, which incorporates an oxidation catalyst, which is comprised of Pt on an aluminum oxide deposited on a honeycomb carrier. Such modification would have been obvious to one of ordinary skill in the art, because one of ordinary skill in the art would have expected a process for reducing nitrogen oxides by SCR using an oxidation catalyst as taught by Andreasson et al., to be similarly useful and applicable to a process for reducing nitrogen oxide by SCR, which also uses an oxidation catalyst as taught by Hammer et al.

***Response to Arguments***

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6. Applicant's arguments with respect to claims 1-12 have been considered but are moot in view of the new ground(s) of rejection.

**Conclusion**

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonas N. Strickland whose telephone number is 703-306-5692. The examiner can normally be reached on M-TH, 7:30-5:00, off 1st Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 703-308-3837. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-0661.



Jonas N. Strickland  
September 16, 2003

STEVEN BOS  
PRIMARY EXAMINER  
GROUP 1100

